SEQUENCE LISTING

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<120> CARD11 NFkB ACTIVATING POLYPEPTIDES, NUCLEIC ACIDS, INBRED AND TRANSGENIC ANIMALS, AND METHODS OF USE THEREOF

<130> 022731/0502

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<141> 2003-08-01

<150> US 60/401,078
<151> 2002-08-02

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<151> 2002-10-29

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<170> PatentIn Ver. 2.1

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Glu Ala Leu Trp Asp Asn Val Glu Cys Asn Arg His Met Leu Ser Arg
         15                  20                  25

tac atc aac ccc gcc aag ctc acc ccc tac ctg cgc cag tgc aag gtc   146
Tyr Ile Asn Pro Ala Lys Leu Thr Pro Tyr Leu Arg Gln Cys Lys Val
     30                  35                  40

atc gat gag caa gat gaa gac gag gtg ctc aat gcg ccc atg ctg ccg   194
Ile Asp Glu Gln Asp Glu Asp Glu Val Leu Asn Ala Pro Met Leu Pro
 45                  50                  55                  60

tcc aag atc aac cgt gca ggc cga ttg ttg gac att ctt cac acc aag   242
Ser Lys Ile Asn Arg Ala Gly Arg Leu Leu Asp Ile Leu His Thr Lys
                 65                  70                  75

gga caa agg ggc tat gtg gtc ttc ctg gag agc ctg gag ttt tac tac   290
Gly Gln Arg Gly Tyr Val Val Phe Leu Glu Ser Leu Glu Phe Tyr Tyr
             80                  85                  90
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cca gaa ctt tac aaa ctg gtg act gga aag gaa ccc acc cgg aga ttc   338
Pro Glu Leu Tyr Lys Leu Val Thr Gly Lys Glu Pro Thr Arg Arg Phe
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tcc acc att gtg gtg gag gaa ggc cat gag ggc ctc aca cac ttc ctg   386
Ser Thr Ile Val Val Glu Glu Gly His Glu Gly Leu Thr His Phe Leu
    110                 115                 120

atg aac gag gtc atc aaa ctg cag cag caa gtg aaa gcc aag gac ctt   434
Met Asn Glu Val Ile Lys Leu Gln Gln Gln Val Lys Ala Lys Asp Leu
125                 130                 135                 140

cag cgc tgt gag ctg ctg gcc aag tcc cgg caa ctg gag gat gag aag   482
Gln Arg Cys Glu Leu Leu Ala Lys Ser Arg Gln Leu Glu Asp Glu Lys
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aag cag ctg agc ctg ata cgg gtg gag ctg ctg acc ttc cag gag cga   530
Lys Gln Leu Ser Leu Ile Arg Val Glu Leu Leu Thr Phe Gln Glu Arg
            160                 165                 170

tac tac aag atg aag gag gag cgg gac agc tac aat gac gag ctc gtc   578
Tyr Tyr Lys Met Lys Glu Glu Arg Asp Ser Tyr Asn Asp Glu Leu Val
        175                 180                 185

aag gtc aag gac gac aac tac aac tta gcc atg cgc tac gcc cag ctc   626
Lys Val Lys Asp Asp Asn Tyr Asn Leu Ala Met Arg Tyr Ala Gln Leu
    190                 195                 200

agt gag gag aaa aac atg gcg gtg atg agg agc cgc gac ctc caa ctc   674
Ser Glu Glu Lys Asn Met Ala Val Met Arg Ser Arg Asp Leu Gln Leu
205                 210                 215                 220

gag atc gac cag ctc aaa cac cga ctg aac aag atg gag gag gaa tgc   722
Glu Ile Asp Gln Leu Lys His Arg Leu Asn Lys Met Glu Glu Glu Cys
                225                 230                 235

aag ctg gag aga aat cag tcc ctc aag ctc aag aat gac atc gag aac   770
Lys Leu Glu Arg Asn Gln Ser Leu Lys Leu Lys Asn Asp Ile Glu Asn
            240                 245                 250

cgg ccc agg aag gag cag gtc ctg gag ctg gag cgg gag aat gag atg   818
Arg Pro Arg Lys Glu Gln Val Leu Glu Leu Glu Arg Glu Asn Glu Met
        255                 260                 265

ctg aag acg aaa att cag gag ctg cag tcc atc atc cag gct ggc aag   866
Leu Lys Thr Lys Ile Gln Glu Leu Gln Ser Ile Ile Gln Ala Gly Lys
    270                 275                 280

cgc agc ctc cct gac tca gac aag gcc atc ttg gac atc ctg gaa cat   914
Arg Ser Leu Pro Asp Ser Asp Lys Ala Ile Leu Asp Ile Leu Glu His
285                 290                 295                 300

gac cgg aag gag gcg cta gag gac cgg cag gaa ctg gtc aac aaa att   962
Asp Arg Lys Glu Ala Leu Glu Asp Arg Gln Glu Leu Val Asn Lys Ile
                305                 310                 315
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tac aac cta caa gag gaa gtc cgc cag gcg gag gag ctg cgg gat aag   1010
Tyr Asn Leu Gln Glu Glu Val Arg Gln Ala Glu Glu Leu Arg Asp Lys
            320                 325                 330

tac ctg gag gag aag gaa gac ctg gaa ctc aag tgt tca acc ctg ggg   1058
Tyr Leu Glu Glu Lys Glu Asp Leu Glu Leu Lys Cys Ser Thr Leu Gly
        335                 340                 345

aag gac tgt gaa atg tac aag cac cgc atg aac aca gtt atg ctg cag   1106
Lys Asp Cys Glu Met Tyr Lys His Arg Met Asn Thr Val Met Leu Gln
    350                 355                 360

ctg gag gag gtg gag cgg gag cgg gac cag gcc ttc cac tcc cga gat   1154
Leu Glu Glu Val Glu Arg Glu Arg Asp Gln Ala Phe His Ser Arg Asp
365                 370                 375                 380

gag gca cag aca cag tac tca cag tgc tta atc gag aag gac aag tac   1202
Glu Ala Gln Thr Gln Tyr Ser Gln Cys Leu Ile Glu Lys Asp Lys Tyr
                385                 390                 395

cgg aag cag atc cgg gag ctg gag gag aag aac gat gag atg cgt att   1250
Arg Lys Gln Ile Arg Glu Leu Glu Glu Lys Asn Asp Glu Met Arg Ile
            400                 405                 410

gag atg gtg agg agg gag gcc tgt att gtc aac ctg gaa agc aag ctc   1298
Glu Met Val Arg Arg Glu Ala Cys Ile Val Asn Leu Glu Ser Lys Leu
        415                 420                 425

cgg cgc ctg tcc aag gac aac ggc agc ctc gac cag agt ctg cct aga   1346
Arg Arg Leu Ser Lys Asp Asn Gly Ser Leu Asp Gln Ser Leu Pro Arg
    430                 435                 440

cac ctt cca gcc acc atc atc tca cag aac ctt gga gac acc agc ccc   1394
His Leu Pro Ala Thr Ile Ile Ser Gln Asn Leu Gly Asp Thr Ser Pro
445                 450                 455                 460

agg acc aat ggc cag gaa gct gat gat tct tca acc tca gaa gag tct   1442
Arg Thr Asn Gly Gln Glu Ala Asp Asp Ser Ser Thr Ser Glu Glu Ser
                465                 470                 475

ccc gaa gac agc aag tac ttt ctg cct tac cac cca ccc cgg cgc cgg   1490
Pro Glu Asp Ser Lys Tyr Phe Leu Pro Tyr His Pro Pro Arg Arg Arg
            480                 485                 490

atg aac cta aag ggc atc cag ctg cag aga gcc aaa tcc ccc atc agc   1538
Met Asn Leu Lys Gly Ile Gln Leu Gln Arg Ala Lys Ser Pro Ile Ser
        495                 500                 505

atg aag caa gca tct gag ttt caa gtc aag ggg cac gaa gag gat ttc   1586
Met Lys Gln Ala Ser Glu Phe Gln Val Lys Gly His Glu Glu Asp Phe
    510                 515                 520

aca gac ggc agc ccc agt tcc tcc cgc tcg ctg cct gtc acc agc tct   1634
Thr Asp Gly Ser Pro Ser Ser Ser Arg Ser Leu Pro Val Thr Ser Ser
525                 530                 535                 540
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ttc tcc aag atg caa ccc cat cgg agc cgc agc agc atc atg tca atc   1682
Phe Ser Lys Met Gln Pro His Arg Ser Arg Ser Ser Ile Met Ser Ile
                545                 550                 555

acg gca gag ccc ccg gga aat gac tcc ata gtc aga cgc tgt aag gaa   1730
Thr Ala Glu Pro Pro Gly Asn Asp Ser Ile Val Arg Arg Cys Lys Glu
            560                 565                 570

gat gcg cca cac cgg agc acg gtg gaa gaa gac aac gat agc tgt ggg   1778
Asp Ala Pro His Arg Ser Thr Val Glu Glu Asp Asn Asp Ser Cys Gly
        575                 580                 585

ttt gat gcc tta gac ctt gac gat gaa aat cac gaa cgt tat tcc ttt   1826
Phe Asp Ala Leu Asp Leu Asp Asp Glu Asn His Glu Arg Tyr Ser Phe
    590                 595                 600

gga cct ccc tcc atc cac tcc tcc tcc tct tca cac cag tca gag gga   1874
Gly Pro Pro Ser Ile His Ser Ser Ser Ser Ser His Gln Ser Glu Gly
605                 610                 615                 620

ctg gat gcc tac gac ctg gag cag gtc aac ctc atg tta cga aag ttc   1922
Leu Asp Ala Tyr Asp Leu Glu Gln Val Asn Leu Met Leu Arg Lys Phe
                625                 630                 635

tct ttg gaa agg ccc ttc cgg cca tcg gtc aca tct ggg ggt cac gtg   1970
Ser Leu Glu Arg Pro Phe Arg Pro Ser Val Thr Ser Gly Gly His Val
            640                 645                 650

cgg ggc acc ggg ccc ttg gtc cag cac aca act ctg aat ggc gat ggg   2018
Arg Gly Thr Gly Pro Leu Val Gln His Thr Thr Leu Asn Gly Asp Gly
        655                 660                 665

ctc atc acg cag ctc acc ctt ctg ggc ggc aat gca cgc ggg agc ttc   2066
Leu Ile Thr Gln Leu Thr Leu Leu Gly Gly Asn Ala Arg Gly Ser Phe
    670                 675                 680

att cac tct gtc aag cca ggc tca ctg gct gag agg gcc gga ctg cgt   2114
Ile His Ser Val Lys Pro Gly Ser Leu Ala Glu Arg Ala Gly Leu Arg
685                 690                 695                 700

gag ggc cac caa ctc ctg ctg ctg gaa ggt tgc atc cga ggc gaa agg   2162
Glu Gly His Gln Leu Leu Leu Leu Glu Gly Cys Ile Arg Gly Glu Arg
                705                 710                 715

cag agc gtt cca ctg gat gcg tgc aca aaa gaa gag gcc cgt tgg acc   2210
Gln Ser Val Pro Leu Asp Ala Cys Thr Lys Glu Glu Ala Arg Trp Thr
            720                 725                 730

atc cag agg tgc agt ggc ctc atc act ctg cat tac aag gtc aac cat   2258
Ile Gln Arg Cys Ser Gly Leu Ile Thr Leu His Tyr Lys Val Asn His
        735                 740                 745

gaa gga tac cgg aag ctg ctg aag gag atg gag gat ggt ctg atc aca   2306
Glu Gly Tyr Arg Lys Leu Leu Lys Glu Met Glu Asp Gly Leu Ile Thr
    750                 755                 760
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tca ggg gac tcg ttc tat atc cgc ctg aac ctg aac atc tcc agc cag   2354
Ser Gly Asp Ser Phe Tyr Ile Arg Leu Asn Leu Asn Ile Ser Ser Gln
765                 770                 775                 780

ctg gat gcc tgc tcc atg tcc ctc aag tgt gac gac gtg gtg cat gtc   2402
Leu Asp Ala Cys Ser Met Ser Leu Lys Cys Asp Asp Val Val His Val
                785                 790                 795

cta gac acc atg tac cag gac agg cac gag tgg ctg tgt gca cga gtc   2450
Leu Asp Thr Met Tyr Gln Asp Arg His Glu Trp Leu Cys Ala Arg Val
            800                 805                 810

gac ccc ttc act gac caa gac ctg gac acg ggc acc atc ccc agc tac   2498
Asp Pro Phe Thr Asp Gln Asp Leu Asp Thr Gly Thr Ile Pro Ser Tyr
        815                 820                 825

agc cgg gct caa cag ctt ctc ctg gtg aag ctc cag cgg ttg gtt cac   2546
Ser Arg Ala Gln Gln Leu Leu Leu Val Lys Leu Gln Arg Leu Val His
    830                 835                 840

aga ggc aac cgg gaa gag gca gac agc gct cac cac acc ctg cgc agc   2594
Arg Gly Asn Arg Glu Glu Ala Asp Ser Ala His His Thr Leu Arg Ser
845                 850                 855                 860

ctc cgg aac acc ctg cag ccc gaa gag atg ctt tcg acg agc gac ccc   2642
Leu Arg Asn Thr Leu Gln Pro Glu Glu Met Leu Ser Thr Ser Asp Pro
                865                 870                 875

cga gtc agc ccc cgc ctc tcc aga gcg agt ttc ttc ttt ggc cag ctc   2690
Arg Val Ser Pro Arg Leu Ser Arg Ala Ser Phe Phe Phe Gly Gln Leu
            880                 885                 890

ctg cag ttt gtc agc cgg tca gaa aac aag tac aaa aga atg aac agc   2738
Leu Gln Phe Val Ser Arg Ser Glu Asn Lys Tyr Lys Arg Met Asn Ser
        895                 900                 905

aat gag cgc gtg aga atc atc tct ggg agt ccc ctg ggg agc ctc tcc   2786
Asn Glu Arg Val Arg Ile Ile Ser Gly Ser Pro Leu Gly Ser Leu Ser
    910                 915                 920

cgg tcc tcg ctg gat gcc acc aaa ctc ctg acc gag aag cat gaa gaa   2834
Arg Ser Ser Leu Asp Ala Thr Lys Leu Leu Thr Glu Lys His Glu Glu
925                 930                 935                 940

ctg gat cct gag aat gag ctc agc cgg aac ctc acc ctg atc cct tac   2882
Leu Asp Pro Glu Asn Glu Leu Ser Arg Asn Leu Thr Leu Ile Pro Tyr
                945                 950                 955

agc ctg gtg cgc gct ttc cac tgt gag cgc cgc agg cct gtg ctc ttc   2930
Ser Leu Val Arg Ala Phe His Cys Glu Arg Arg Arg Pro Val Leu Phe
            960                 965                 970

acg ccc acc atg ctg gcc aag aca ttg gtg cag aag ctg ctc aac tca   2978
Thr Pro Thr Met Leu Ala Lys Thr Leu Val Gln Lys Leu Leu Asn Ser
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ggg ggt gcc atg gag ttc acc atc tgc aag tca gat att gtc aca aga   3026
Gly Gly Ala Met Glu Phe Thr Ile Cys Lys Ser Asp Ile Val Thr Arg
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gat gag ttc ctc cga aag cag aag aca gag acc atc atc tac tcc cgg   3074
Asp Glu Phe Leu Arg Lys Gln Lys Thr Glu Thr Ile Ile Tyr Ser Arg
1005               1010                1015                1020

gaa aag aac ccc aac acc ttt gaa tgc atc gtc cct gcc aac att gag   3122
Glu Lys Asn Pro Asn Thr Phe Glu Cys Ile Val Pro Ala Asn Ile Glu
               1025                1030                1035

gct gtg gca gcc aag aac aaa cac tgc ctg ctg gag gct ggg atc ggc   3170
Ala Val Ala Ala Lys Asn Lys His Cys Leu Leu Glu Ala Gly Ile Gly
           1040                1045                1050

tgt gtg cgc gac ctg atc aag tgc aag gtg tac ccc ata gtg ctg ctc   3218
Cys Val Arg Asp Leu Ile Lys Cys Lys Val Tyr Pro Ile Val Leu Leu
       1055                1060                1065

atc cgg gtg agc gag aag aac atc aaa cgg ttc agg aag ctg ctg ccg   3266
Ile Arg Val Ser Glu Lys Asn Ile Lys Arg Phe Arg Lys Leu Leu Pro
   1070                1075                1080

cgg cca gag acg gaa gag gaa ttc ctg cga gtg tgc agg ctc aaa gag   3314
Arg Pro Glu Thr Glu Glu Glu Phe Leu Arg Val Cys Arg Leu Lys Glu
1085               1090                1095                1100

aag gag ctg gag gcg ctg ccc tgc ctc tac gcc acc gtg gaa gct gag   3362
Lys Glu Leu Glu Ala Leu Pro Cys Leu Tyr Ala Thr Val Glu Ala Glu
               1105                1110                1115

atg tgg agc agc gtg gag gag ctg ctg cga gtc ctc aaa gac aag att   3410
Met Trp Ser Ser Val Glu Glu Leu Leu Arg Val Leu Lys Asp Lys Ile
           1120                1125                1130

gta gag gag cag cgc aag acc atc tgg gtg gac gag gac cag ctg       3455
Val Glu Glu Gln Arg Lys Thr Ile Trp Val Asp Glu Asp Gln Leu
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Ala Lys Leu Thr Pro Tyr Leu Arg Gln Cys Lys Val Ile Asp Glu Gln
         35                  40                  45
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Asp Glu Asp Glu Val Leu Asn Ala Pro Met Leu Pro Ser Lys Ile Asn
     50                  55                  60

Arg Ala Gly Arg Leu Leu Asp Ile Leu His Thr Lys Gly Gln Arg Gly
 65                  70                  75                  80

Tyr Val Val Phe Leu Glu Ser Leu Glu Phe Tyr Tyr Pro Glu Leu Tyr
                 85                  90                  95

Lys Leu Val Thr Gly Lys Glu Pro Thr Arg Arg Phe Ser Thr Ile Val
            100                 105                 110

Val Glu Glu Gly His Glu Gly Leu Thr His Phe Leu Met Asn Glu Val
        115                 120                 125

Ile Lys Leu Gln Gln Gln Val Lys Ala Lys Asp Leu Gln Arg Cys Glu
    130                 135                 140

Leu Leu Ala Lys Ser Arg Gln Leu Glu Asp Glu Lys Lys Gln Leu Ser
145                 150                 155                 160

Leu Ile Arg Val Glu Leu Leu Thr Phe Gln Glu Arg Tyr Tyr Lys Met
                165                 170                 175

Lys Glu Glu Arg Asp Ser Tyr Asn Asp Glu Leu Val Lys Val Lys Asp
            180                 185                 190

Asp Asn Tyr Asn Leu Ala Met Arg Tyr Ala Gln Leu Ser Glu Glu Lys
        195                 200                 205

Asn Met Ala Val Met Arg Ser Arg Asp Leu Gln Leu Glu Ile Asp Gln
    210                 215                 220

Leu Lys His Arg Leu Asn Lys Met Glu Glu Glu Cys Lys Leu Glu Arg
225                 230                 235                 240

Asn Gln Ser Leu Lys Leu Lys Asn Asp Ile Glu Asn Arg Pro Arg Lys
                245                 250                 255

Glu Gln Val Leu Glu Leu Glu Arg Glu Asn Glu Met Leu Lys Thr Lys
            260                 265                 270

Ile Gln Glu Leu Gln Ser Ile Ile Gln Ala Gly Lys Arg Ser Leu Pro
        275                 280                 285

Asp Ser Asp Lys Ala Ile Leu Asp Ile Leu Glu His Asp Arg Lys Glu
    290                 295                 300

Ala Leu Glu Asp Arg Gln Glu Leu Val Asn Lys Ile Tyr Asn Leu Gln
305                 310                 315                 320

Glu Glu Val Arg Gln Ala Glu Glu Leu Arg Asp Lys Tyr Leu Glu Glu
                325                 330                 335

Lys Glu Asp Leu Glu Leu Lys Cys Ser Thr Leu Gly Lys Asp Cys Glu
            340                 345                 350
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Met Tyr Lys His Arg Met Asn Thr Val Met Leu Gln Leu Glu Glu Val
        355                 360                 365

Glu Arg Glu Arg Asp Gln Ala Phe His Ser Arg Asp Glu Ala Gln Thr
    370                 375                 380

Gln Tyr Ser Gln Cys Leu Ile Glu Lys Asp Lys Tyr Arg Lys Gln Ile
385                 390                 395                 400

Arg Glu Leu Glu Glu Lys Asn Asp Glu Met Arg Ile Glu Met Val Arg
                405                 410                 415

Arg Glu Ala Cys Ile Val Asn Leu Glu Ser Lys Leu Arg Arg Leu Ser
            420                 425                 430

Lys Asp Asn Gly Ser Leu Asp Gln Ser Leu Pro Arg His Leu Pro Ala
        435                 440                 445

Thr Ile Ile Ser Gln Asn Leu Gly Asp Thr Ser Pro Arg Thr Asn Gly
    450                 455                 460

Gln Glu Ala Asp Asp Ser Ser Thr Ser Glu Glu Ser Pro Glu Asp Ser
465                 470                 475                 480

Lys Tyr Phe Leu Pro Tyr His Pro Pro Arg Arg Arg Met Asn Leu Lys
                485                 490                 495

Gly Ile Gln Leu Gln Arg Ala Lys Ser Pro Ile Ser Met Lys Gln Ala
            500                 505                 510

Ser Glu Phe Gln Val Lys Gly His Glu Glu Asp Phe Thr Asp Gly Ser
        515                 520                 525

Pro Ser Ser Ser Arg Ser Leu Pro Val Thr Ser Ser Phe Ser Lys Met
    530                 535                 540

Gln Pro His Arg Ser Arg Ser Ser Ile Met Ser Ile Thr Ala Glu Pro
545                 550                 555                 560

Pro Gly Asn Asp Ser Ile Val Arg Arg Cys Lys Glu Asp Ala Pro His
                565                 570                 575

Arg Ser Thr Val Glu Glu Asp Asn Asp Ser Cys Gly Phe Asp Ala Leu
            580                 585                 590

Asp Leu Asp Asp Glu Asn His Glu Arg Tyr Ser Phe Gly Pro Pro Ser
        595                 600                 605

Ile His Ser Ser Ser Ser Ser His Gln Ser Glu Gly Leu Asp Ala Tyr
    610                 615                 620

Asp Leu Glu Gln Val Asn Leu Met Leu Arg Lys Phe Ser Leu Glu Arg
625                 630                 635                 640

Pro Phe Arg Pro Ser Val Thr Ser Gly Gly His Val Arg Gly Thr Gly
                645                 650                 655
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Pro Leu Val Gln His Thr Thr Leu Asn Gly Asp Gly Leu Ile Thr Gln
            660                 665                 670

Leu Thr Leu Leu Gly Gly Asn Ala Arg Gly Ser Phe Ile His Ser Val
        675                 680                 685

Lys Pro Gly Ser Leu Ala Glu Arg Ala Gly Leu Arg Glu Gly His Gln
    690                 695                 700

Leu Leu Leu Leu Glu Gly Cys Ile Arg Gly Glu Arg Gln Ser Val Pro
705                 710                 715                 720

Leu Asp Ala Cys Thr Lys Glu Glu Ala Arg Trp Thr Ile Gln Arg Cys
                725                 730                 735

Ser Gly Leu Ile Thr Leu His Tyr Lys Val Asn His Glu Gly Tyr Arg
            740                 745                 750

Lys Leu Leu Lys Glu Met Glu Asp Gly Leu Ile Thr Ser Gly Asp Ser
        755                 760                 765

Phe Tyr Ile Arg Leu Asn Leu Asn Ile Ser Ser Gln Leu Asp Ala Cys
    770                 775                 780

Ser Met Ser Leu Lys Cys Asp Asp Val Val His Val Leu Asp Thr Met
785                 790                 795                 800

Tyr Gln Asp Arg His Glu Trp Leu Cys Ala Arg Val Asp Pro Phe Thr
                805                 810                 815

Asp Gln Asp Leu Asp Thr Gly Thr Ile Pro Ser Tyr Ser Arg Ala Gln
            820                 825                 830

Gln Leu Leu Leu Val Lys Leu Gln Arg Leu Val His Arg Gly Asn Arg
        835                 840                 845

Glu Glu Ala Asp Ser Ala His His Thr Leu Arg Ser Leu Arg Asn Thr
    850                 855                 860

Leu Gln Pro Glu Glu Met Leu Ser Thr Ser Asp Pro Arg Val Ser Pro
865                 870                 875                 880

Arg Leu Ser Arg Ala Ser Phe Phe Phe Gly Gln Leu Leu Gln Phe Val
                885                 890                 895

Ser Arg Ser Glu Asn Lys Tyr Lys Arg Met Asn Ser Asn Glu Arg Val
            900                 905                 910

Arg Ile Ile Ser Gly Ser Pro Leu Gly Ser Leu Ser Arg Ser Ser Leu
        915                 920                 925

Asp Ala Thr Lys Leu Leu Thr Glu Lys His Glu Glu Leu Asp Pro Glu
    930                 935                 940

Asn Glu Leu Ser Arg Asn Leu Thr Leu Ile Pro Tyr Ser Leu Val Arg
945                 950                 955                 960
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Ala Phe His Cys Glu Arg Arg Arg Pro Val Leu Phe Thr Pro Thr Met
                965                 970                 975

Leu Ala Lys Thr Leu Val Gln Lys Leu Leu Asn Ser Gly Gly Ala Met
            980                 985                 990

Glu Phe Thr Ile Cys Lys Ser Asp Ile Val Thr Arg Asp Glu Phe Leu
        995                1000                1005

Arg Lys Gln Lys Thr Glu Thr Ile Ile Tyr Ser Arg Glu Lys Asn Pro
   1010                1015                1020

Asn Thr Phe Glu Cys Ile Val Pro Ala Asn Ile Glu Ala Val Ala Ala
1025                1030                1035                1040

Lys Asn Lys His Cys Leu Leu Glu Ala Gly Ile Gly Cys Val Arg Asp
                1045                1050                1055

Leu Ile Lys Cys Lys Val Tyr Pro Ile Val Leu Leu Ile Arg Val Ser
            1060                1065                1070

Glu Lys Asn Ile Lys Arg Phe Arg Lys Leu Leu Pro Arg Pro Glu Thr
        1075                1080                1085

Glu Glu Glu Phe Leu Arg Val Cys Arg Leu Lys Glu Lys Glu Leu Glu
   1090                1095                1100

Ala Leu Pro Cys Leu Tyr Ala Thr Val Glu Ala Glu Met Trp Ser Ser
1105                1110                1115                1120

Val Glu Glu Leu Leu Arg Val Leu Lys Asp Lys Ile Val Glu Glu Gln
                1125                1130                1135

Arg Lys Thr Ile Trp Val Asp Glu Asp Gln Leu
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ggaatgcaac cggcacatgc tgagccgtta catcaacccc gccaagctca ccccctacct 180
gcgccagtgc aaggtcatcg atgagcaaga tgaagacgag gtgctcaatg cgcccatgct 240
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                 1               5                  10

gag gcc cta tgg gat aac gtg gaa tgc aac cgg cac atg ctg agc cgt   98
Glu Ala Leu Trp Asp Asn Val Glu Cys Asn Arg His Met Leu Ser Arg
         15                  20                  25

tac atc aac ccc gcc aag ctc acc ccc tac ctg cgc cag tgc aag gtc   146
Tyr Ile Asn Pro Ala Lys Leu Thr Pro Tyr Leu Arg Gln Cys Lys Val
     30                  35                  40

atc gat gag caa gat gaa gac gag gtg ctc aat gcg ccc atg ctg ccg   194
Ile Asp Glu Gln Asp Glu Asp Glu Val Leu Asn Ala Pro Met Leu Pro
 45                  50                  55                  60

tcc aag atc aac cgt gca ggc cga ttg ttg gac att ctt cac acc aag   242
Ser Lys Ile Asn Arg Ala Gly Arg Leu Leu Asp Ile Leu His Thr Lys
                 65                  70                  75

gga caa agg ggc tat gtg gtc ttc ctg gag agc ctg gag ttt tac tac   290
Gly Gln Arg Gly Tyr Val Val Phe Leu Glu Ser Leu Glu Phe Tyr Tyr
             80                  85                  90

cca gaa ctt tac aaa ctg gtg act gga aag gaa ccc acc cgg aga ttc   338
Pro Glu Leu Tyr Lys Leu Val Thr Gly Lys Glu Pro Thr Arg Arg Phe
         95                  100                 105

tcc acc att gtg gtg gag gaa ggc cat gag ggc ctc aca cac ttc ctg   386
Ser Thr Ile Val Val Glu Glu Gly His Glu Gly Leu Thr His Phe Leu
    110                 115                 120

atg aac gag gtc atc aaa ctg cag cag caa gtg aaa gcc aag gac ctt   434
Met Asn Glu Val Ile Lys Leu Gln Gln Gln Val Lys Ala Lys Asp Leu
125                 130                 135                 140

cag cgc tgt gag ctg ctg gcc aag tcc cgg caa ctg gag gat gag aag   482
Gln Arg Cys Glu Leu Leu Ala Lys Ser Arg Gln Leu Glu Asp Glu Lys
                145                 150                 155

aag cag ctg agc ctg ata cgg gtg gag ctg ctg acc ttc cag gag cga   530
Lys Gln Leu Ser Leu Ile Arg Val Glu Leu Leu Thr Phe Gln Glu Arg
            160                 165                 170

tac tac aag atg aag gag gag cgg gac agc tac aat gac gag ctc gtc   578
Tyr Tyr Lys Met Lys Glu Glu Arg Asp Ser Tyr Asn Asp Glu Leu Val
        175                 180                 185

aag gtc aag gac gac aac tac aac tta gcc atg cgc tac gcc cag ctc   626
Lys Val Lys Asp Asp Asn Tyr Asn Leu Ala Met Arg Tyr Ala Gln Leu
    190                 195                 200
```

```
agt gag gag aaa aac atg gcg gtg atg agg agc cgc gac ctc caa ctc   674
Ser Glu Glu Lys Asn Met Ala Val Met Arg Ser Arg Asp Leu Gln Leu
205                 210                 215                 220

gag atc gac cag ctc aaa cac cga ctg aac aag atg gag gag gaa tgc   722
Glu Ile Asp Gln Leu Lys His Arg Leu Asn Lys Met Glu Glu Glu Cys
                225                 230                 235

aag ctg gag aga aat cag tcc ctc aag ctc aag aat gac atc gag aac   770
Lys Leu Glu Arg Asn Gln Ser Leu Lys Leu Lys Asn Asp Ile Glu Asn
            240                 245                 250

cgg ccc agg aag gag cag gtc ctg gag ctg gag cgg gag aat gag atg   818
Arg Pro Arg Lys Glu Gln Val Leu Glu Leu Glu Arg Glu Asn Glu Met
        255                 260                 265

ctg aag acg aaa att cag gag ctg cag tcc atc atc cag gct ggc aag   866
Leu Lys Thr Lys Ile Gln Glu Leu Gln Ser Ile Ile Gln Ala Gly Lys
    270                 275                 280

cgc agc ctc cct gac tca gac aag gcc atc ttg gac atc cag gaa cat   914
Arg Ser Leu Pro Asp Ser Asp Lys Ala Ile Leu Asp Ile Gln Glu His
285                 290                 295                 300

gac cgg aag gag gcg cta gag gac cgg cag gaa ctg gtc aac aaa att   962
Asp Arg Lys Glu Ala Leu Glu Asp Arg Gln Glu Leu Val Asn Lys Ile
                305                 310                 315

tac aac cta caa gag gaa gtc cgc cag gcg gag gag ctg cgg gat aag   1010
Tyr Asn Leu Gln Glu Glu Val Arg Gln Ala Glu Glu Leu Arg Asp Lys
            320                 325                 330

tac ctg gag gag aag gaa gac ctg gaa ctc aag tgt tca acc ctg ggg   1058
Tyr Leu Glu Glu Lys Glu Asp Leu Glu Leu Lys Cys Ser Thr Leu Gly
        335                 340                 345

aag gac tgt gaa atg tac aag cac cgc atg aac aca gtt atg ctg cag   1106
Lys Asp Cys Glu Met Tyr Lys His Arg Met Asn Thr Val Met Leu Gln
    350                 355                 360

ctg gag gag gtg gag cgg gag cgg gac cag gcc ttc cac tcc cga gat   1154
Leu Glu Glu Val Glu Arg Glu Arg Asp Gln Ala Phe His Ser Arg Asp
365                 370                 375                 380

gag gca cag aca cag tac tca cag tgc tta atc gag aag gac aag tac   1202
Glu Ala Gln Thr Gln Tyr Ser Gln Cys Leu Ile Glu Lys Asp Lys Tyr
                385                 390                 395

cgg aag cag atc cgg gag ctg gag gag aag aac gat gag atg cgt att   1250
Arg Lys Gln Ile Arg Glu Leu Glu Glu Lys Asn Asp Glu Met Arg Ile
            400                 405                 410

gag atg gtg agg agg gag gcc tgt att gtc aac ctg gaa agc aag ctc   1298
Glu Met Val Arg Arg Glu Ala Cys Ile Val Asn Leu Glu Ser Lys Leu
        415                 420                 425
```

```
cgg cgc ctg tcc aag gac aac ggc agc ctc gac cag agt ctg cct aga   1346
Arg Arg Leu Ser Lys Asp Asn Gly Ser Leu Asp Gln Ser Leu Pro Arg
    430                 435                 440

cac ctt cca gcc acc atc atc tca cag aac ctt gga gac acc agc ccc   1394
His Leu Pro Ala Thr Ile Ile Ser Gln Asn Leu Gly Asp Thr Ser Pro
445                 450                 455                 460

agg acc aat ggc cag gaa gct gat gat tct tca acc tca gaa gag tct   1442
Arg Thr Asn Gly Gln Glu Ala Asp Asp Ser Ser Thr Ser Glu Glu Ser
                465                 470                 475

ccc gaa gac agc aag tac ttt ctg cct tac cac cca ccc cgg cgc cgg   1490
Pro Glu Asp Ser Lys Tyr Phe Leu Pro Tyr His Pro Pro Arg Arg Arg
            480                 485                 490

atg aac cta aag ggc atc cag ctg cag aga gcc aaa tcc ccc atc agc   1538
Met Asn Leu Lys Gly Ile Gln Leu Gln Arg Ala Lys Ser Pro Ile Ser
        495                 500                 505

atg aag caa gca tct gag ttt caa gtc aag ggg cac gaa gag gat ttc   1586
Met Lys Gln Ala Ser Glu Phe Gln Val Lys Gly His Glu Glu Asp Phe
    510                 515                 520

aca gac ggc agc ccc agt tcc tcc cgc tcg ctg cct gtc acc agc tct   1634
Thr Asp Gly Ser Pro Ser Ser Ser Arg Ser Leu Pro Val Thr Ser Ser
525                 530                 535                 540

ttc tcc aag atg caa ccc cat cgg agc cgc agc agc atc atg tca atc   1682
Phe Ser Lys Met Gln Pro His Arg Ser Arg Ser Ser Ile Met Ser Ile
                545                 550                 555

acg gca gag ccc ccg gga aat gac tcc ata gtc aga cgc tgt aag gaa   1730
Thr Ala Glu Pro Pro Gly Asn Asp Ser Ile Val Arg Arg Cys Lys Glu
            560                 565                 570

gat gcg cca cac cgg agc acg gtg gaa gaa gac aac gat agc tgt ggg   1778
Asp Ala Pro His Arg Ser Thr Val Glu Glu Asp Asn Asp Ser Cys Gly
        575                 580                 585

ttt gat gcc tta gac ctt gac gat gaa aat cac gaa cgt tat tcc ttt   1826
Phe Asp Ala Leu Asp Leu Asp Asp Glu Asn His Glu Arg Tyr Ser Phe
    590                 595                 600

gga cct ccc tcc atc cac tcc tcc tcc tct tca cac cag tca gag gga   1874
Gly Pro Pro Ser Ile His Ser Ser Ser Ser Ser His Gln Ser Glu Gly
605                 610                 615                 620

ctg gat gcc tac gac ctg gag cag gtc aac ctc atg tta cga aag ttc   1922
Leu Asp Ala Tyr Asp Leu Glu Gln Val Asn Leu Met Leu Arg Lys Phe
                625                 630                 635

tct ttg gaa agg ccc ttc cgg cca tcg gtc aca tct ggg ggt cac gtg   1970
Ser Leu Glu Arg Pro Phe Arg Pro Ser Val Thr Ser Gly Gly His Val
            640                 645                 650
```

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cgg ggc acc ggg ccc ttg gtc cag cac aca act ctg aat ggc gat ggg   2018
Arg Gly Thr Gly Pro Leu Val Gln His Thr Thr Leu Asn Gly Asp Gly
        655                 660                 665

ctc atc acg cag ctc acc ctt ctg ggc ggc aat gca cgc ggg agc ttc   2066
Leu Ile Thr Gln Leu Thr Leu Leu Gly Gly Asn Ala Arg Gly Ser Phe
    670                 675                 680

att cac tct gtc aag cca ggc tca ctg gct gag agg gcc gga ctg cgt   2114
Ile His Ser Val Lys Pro Gly Ser Leu Ala Glu Arg Ala Gly Leu Arg
685                 690                 695                 700

gag ggc cac caa ctc ctg ctg ctg gaa ggt tgc atc cga ggc gaa agg   2162
Glu Gly His Gln Leu Leu Leu Leu Glu Gly Cys Ile Arg Gly Glu Arg
                705                 710                 715

cag agc gtt cca ctg gat gcg tgc aca aaa gaa gag gcc cgt tgg acc   2210
Gln Ser Val Pro Leu Asp Ala Cys Thr Lys Glu Glu Ala Arg Trp Thr
            720                 725                 730

atc cag agg tgc agt ggc ctc atc act ctg cat tac aag gtc aac cat   2258
Ile Gln Arg Cys Ser Gly Leu Ile Thr Leu His Tyr Lys Val Asn His
        735                 740                 745

gaa gga tac cgg aag ctg ctg aag gag atg gag gat ggt ctg atc aca   2306
Glu Gly Tyr Arg Lys Leu Leu Lys Glu Met Glu Asp Gly Leu Ile Thr
    750                 755                 760

tca ggg gac tcg ttc tat atc cgc ctg aac ctg aac atc tcc agc cag   2354
Ser Gly Asp Ser Phe Tyr Ile Arg Leu Asn Leu Asn Ile Ser Ser Gln
765                 770                 775                 780

ctg gat gcc tgc tcc atg tcc ctc aag tgt gac gac gtg gtg cat gtc   2402
Leu Asp Ala Cys Ser Met Ser Leu Lys Cys Asp Asp Val Val His Val
                785                 790                 795

cta gac acc atg tac cag gac agg cac gag tgg ctg tgt gca cga gtc   2450
Leu Asp Thr Met Tyr Gln Asp Arg His Glu Trp Leu Cys Ala Arg Val
            800                 805                 810

gac ccc ttc act gac caa gac ctg gac acg ggc acc atc ccc agc tac   2498
Asp Pro Phe Thr Asp Gln Asp Leu Asp Thr Gly Thr Ile Pro Ser Tyr
        815                 820                 825

agc cgg gct caa cag ctt ctc ctg gtg aag ctc cag cgg ttg gtt cac   2546
Ser Arg Ala Gln Gln Leu Leu Leu Val Lys Leu Gln Arg Leu Val His
    830                 835                 840

aga ggc aac cgg gaa gag gca gac agc gct cac cac acc ctg cgc agc   2594
Arg Gly Asn Arg Glu Glu Ala Asp Ser Ala His His Thr Leu Arg Ser
845                 850                 855                 860

ctc cgg aac acc ctg cag ccc gaa gag atg ctt tcg acg agc gac ccc   2642
Leu Arg Asn Thr Leu Gln Pro Glu Glu Met Leu Ser Thr Ser Asp Pro
                865                 870                 875
```

```
cga gtc agc ccc cgc ctc tcc aga gcg agt ttc ttc ttt ggc cag ctc   2690
Arg Val Ser Pro Arg Leu Ser Arg Ala Ser Phe Phe Phe Gly Gln Leu
            880                 885                 890

ctg cag ttt gtc agc cgg tca gaa aac aag tac aaa aga atg aac agc   2738
Leu Gln Phe Val Ser Arg Ser Glu Asn Lys Tyr Lys Arg Met Asn Ser
        895                 900                 905

aat gag cgc gtg aga atc atc tct ggg agt ccc ctg ggg agc ctc tcc   2786
Asn Glu Arg Val Arg Ile Ile Ser Gly Ser Pro Leu Gly Ser Leu Ser
    910                 915                 920

cgg tcc tcg ctg gat gcc acc aaa ctc ctg acc gag aag cat gaa gaa   2834
Arg Ser Ser Leu Asp Ala Thr Lys Leu Leu Thr Glu Lys His Glu Glu
925                 930                 935                 940

ctg gat cct gag aat gag ctc agc cgg aac ctc acc ctg atc cct tac   2882
Leu Asp Pro Glu Asn Glu Leu Ser Arg Asn Leu Thr Leu Ile Pro Tyr
                945                 950                 955

agc ctg gtg cgc gct ttc cac tgt gag cgc cgc agg cct gtg ctc ttc   2930
Ser Leu Val Arg Ala Phe His Cys Glu Arg Arg Arg Pro Val Leu Phe
            960                 965                 970

acg ccc acc atg ctg gcc aag aca ttg gtg cag aag ctg ctc aac tca   2978
Thr Pro Thr Met Leu Ala Lys Thr Leu Val Gln Lys Leu Leu Asn Ser
        975                 980                 985

ggg ggt gcc atg gag ttc acc atc tgc aag tca gat att gtc aca aga   3026
Gly Gly Ala Met Glu Phe Thr Ile Cys Lys Ser Asp Ile Val Thr Arg
    990                 995                1000

gat gag ttc ctc cga aag cag aag aca gag acc atc atc tac tcc cgg   3074
Asp Glu Phe Leu Arg Lys Gln Lys Thr Glu Thr Ile Ile Tyr Ser Arg
1005                1010                1015                1020

gaa aag aac ccc aac acc ttt gaa tgc atc gtc cct gcc aac att gag   3122
Glu Lys Asn Pro Asn Thr Phe Glu Cys Ile Val Pro Ala Asn Ile Glu
                1025                1030                1035

gct gtg gca gcc aag aac aaa cac tgc ctg ctg gag gct ggg atc ggc   3170
Ala Val Ala Ala Lys Asn Lys His Cys Leu Leu Glu Ala Gly Ile Gly
            1040                1045                1050

tgt gtg cgc gac ctg atc aag tgc aag gtg tac ccc ata gtg ctg ctc   3218
Cys Val Arg Asp Leu Ile Lys Cys Lys Val Tyr Pro Ile Val Leu Leu
        1055                1060                1065

atc cgg gtg agc gag aag aac atc aaa cgg ttc agg aag ctg ctg ccg   3266
Ile Arg Val Ser Glu Lys Asn Ile Lys Arg Phe Arg Lys Leu Leu Pro
    1070                1075                1080

cgg cca gag acg gaa gag gaa ttc ctg cga gtg tgc agg ctc aaa gag   3314
Arg Pro Glu Thr Glu Glu Glu Phe Leu Arg Val Cys Arg Leu Lys Glu
1085                1090                1095                1100
```

```
aag gag ctg gag gcg ctg ccc tgc ctc tac gcc acc gtg gaa gct gag   3362
Lys Glu Leu Glu Ala Leu Pro Cys Leu Tyr Ala Thr Val Glu Ala Glu
               1105                1110                1115

atg tgg agc agc gtg gag gag ctg ctg cga gtc ctc aaa gac aag att   3410
Met Trp Ser Ser Val Glu Glu Leu Leu Arg Val Leu Lys Asp Lys Ile
           1120                1125                1130

gta gag gag cag cgc aag acc atc tgg gtg gac gag gac cag ctg       3455
Val Glu Glu Gln Arg Lys Thr Ile Trp Val Asp Glu Asp Gln Leu
       1135                1140                1145

tgagcttgtc tgggtctgac ctacacacag acacaccgg                       3494
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<210> 5
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<400> 5

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Met Asp Asp Tyr Met Glu Thr Leu Lys Asp Glu Glu Glu Ala Leu Trp
  1               5                  10                  15

Asp Asn Val Glu Cys Asn Arg His Met Leu Ser Arg Tyr Ile Asn Pro
             20                  25                  30

Ala Lys Leu Thr Pro Tyr Leu Arg Gln Cys Lys Val Ile Asp Glu Gln
         35                  40                  45

Asp Glu Asp Glu Val Leu Asn Ala Pro Met Leu Pro Ser Lys Ile Asn
     50                  55                  60

Arg Ala Gly Arg Leu Leu Asp Ile Leu His Thr Lys Gly Gln Arg Gly
 65                  70                  75                  80

Tyr Val Val Phe Leu Glu Ser Leu Glu Phe Tyr Tyr Pro Glu Leu Tyr
                 85                  90                  95

Lys Leu Val Thr Gly Lys Glu Pro Thr Arg Arg Phe Ser Thr Ile Val
            100                 105                 110

Val Glu Glu Gly His Glu Gly Leu Thr His Phe Leu Met Asn Glu Val
        115                 120                 125

Ile Lys Leu Gln Gln Gln Val Lys Ala Lys Asp Leu Gln Arg Cys Glu
    130                 135                 140

Leu Leu Ala Lys Ser Arg Gln Leu Glu Asp Glu Lys Lys Gln Leu Ser
145                 150                 155                 160

Leu Ile Arg Val Glu Leu Leu Thr Phe Gln Glu Arg Tyr Tyr Lys Met
                165                 170                 175

Lys Glu Glu Arg Asp Ser Tyr Asn Asp Glu Leu Val Lys Val Lys Asp
            180                 185                 190
```

```
Asp Asn Tyr Asn Leu Ala Met Arg Tyr Ala Gln Leu Ser Glu Glu Lys
        195                 200                 205

Asn Met Ala Val Met Arg Ser Arg Asp Leu Gln Leu Glu Ile Asp Gln
    210                 215                 220

Leu Lys His Arg Leu Asn Lys Met Glu Glu Glu Cys Lys Leu Glu Arg
225                 230                 235                 240

Asn Gln Ser Leu Lys Leu Lys Asn Asp Ile Glu Asn Arg Pro Arg Lys
                245                 250                 255

Glu Gln Val Leu Glu Leu Glu Arg Glu Asn Glu Met Leu Lys Thr Lys
            260                 265                 270

Ile Gln Glu Leu Gln Ser Ile Ile Gln Ala Gly Lys Arg Ser Leu Pro
        275                 280                 285

Asp Ser Asp Lys Ala Ile Leu Asp Ile Gln Glu His Asp Arg Lys Glu
    290                 295                 300

Ala Leu Glu Asp Arg Gln Glu Leu Val Asn Lys Ile Tyr Asn Leu Gln
305                 310                 315                 320

Glu Glu Val Arg Gln Ala Glu Glu Leu Arg Asp Lys Tyr Leu Glu Glu
                325                 330                 335

Lys Glu Asp Leu Glu Leu Lys Cys Ser Thr Leu Gly Lys Asp Cys Glu
            340                 345                 350

Met Tyr Lys His Arg Met Asn Thr Val Met Leu Gln Leu Glu Glu Val
        355                 360                 365

Glu Arg Glu Arg Asp Gln Ala Phe His Ser Arg Asp Glu Ala Gln Thr
    370                 375                 380

Gln Tyr Ser Gln Cys Leu Ile Glu Lys Asp Lys Tyr Arg Lys Gln Ile
385                 390                 395                 400

Arg Glu Leu Glu Glu Lys Asn Asp Glu Met Arg Ile Glu Met Val Arg
                405                 410                 415

Arg Glu Ala Cys Ile Val Asn Leu Glu Ser Lys Leu Arg Arg Leu Ser
            420                 425                 430

Lys Asp Asn Gly Ser Leu Asp Gln Ser Leu Pro Arg His Leu Pro Ala
        435                 440                 445

Thr Ile Ile Ser Gln Asn Leu Gly Asp Thr Ser Pro Arg Thr Asn Gly
    450                 455                 460

Gln Glu Ala Asp Asp Ser Ser Thr Ser Glu Glu Ser Pro Glu Asp Ser
465                 470                 475                 480

Lys Tyr Phe Leu Pro Tyr His Pro Pro Arg Arg Arg Met Asn Leu Lys
                485                 490                 495
```

```
Gly Ile Gln Leu Gln Arg Ala Lys Ser Pro Ile Ser Met Lys Gln Ala
           500                 505                 510

Ser Glu Phe Gln Val Lys Gly His Glu Glu Asp Phe Thr Asp Gly Ser
       515                 520                 525

Pro Ser Ser Ser Arg Ser Leu Pro Val Thr Ser Ser Phe Ser Lys Met
   530                 535                 540

Gln Pro His Arg Ser Arg Ser Ser Ile Met Ser Ile Thr Ala Glu Pro
545                 550                 555                 560

Pro Gly Asn Asp Ser Ile Val Arg Arg Cys Lys Glu Asp Ala Pro His
                565                 570                 575

Arg Ser Thr Val Glu Glu Asp Asn Asp Ser Cys Gly Phe Asp Ala Leu
           580                 585                 590

Asp Leu Asp Asp Glu Asn His Glu Arg Tyr Ser Phe Gly Pro Pro Ser
       595                 600                 605

Ile His Ser Ser Ser Ser Ser His Gln Ser Glu Gly Leu Asp Ala Tyr
   610                 615                 620

Asp Leu Glu Gln Val Asn Leu Met Leu Arg Lys Phe Ser Leu Glu Arg
625                 630                 635                 640

Pro Phe Arg Pro Ser Val Thr Ser Gly Gly His Val Arg Gly Thr Gly
                645                 650                 655

Pro Leu Val Gln His Thr Thr Leu Asn Gly Asp Gly Leu Ile Thr Gln
           660                 665                 670

Leu Thr Leu Leu Gly Gly Asn Ala Arg Gly Ser Phe Ile His Ser Val
       675                 680                 685

Lys Pro Gly Ser Leu Ala Glu Arg Ala Gly Leu Arg Glu Gly His Gln
   690                 695                 700

Leu Leu Leu Leu Glu Gly Cys Ile Arg Gly Glu Arg Gln Ser Val Pro
705                 710                 715                 720

Leu Asp Ala Cys Thr Lys Glu Glu Ala Arg Trp Thr Ile Gln Arg Cys
                725                 730                 735

Ser Gly Leu Ile Thr Leu His Tyr Lys Val Asn His Glu Gly Tyr Arg
           740                 745                 750

Lys Leu Leu Lys Glu Met Glu Asp Gly Leu Ile Thr Ser Gly Asp Ser
       755                 760                 765

Phe Tyr Ile Arg Leu Asn Leu Asn Ile Ser Ser Gln Leu Asp Ala Cys
   770                 775                 780

Ser Met Ser Leu Lys Cys Asp Asp Val Val His Val Leu Asp Thr Met
785                 790                 795                 800
```

```
Tyr Gln Asp Arg His Glu Trp Leu Cys Ala Arg Val Asp Pro Phe Thr
                805                 810                 815

Asp Gln Asp Leu Asp Thr Gly Thr Ile Pro Ser Tyr Ser Arg Ala Gln
            820                 825                 830

Gln Leu Leu Leu Val Lys Leu Gln Arg Leu Val His Arg Gly Asn Arg
        835                 840                 845

Glu Glu Ala Asp Ser Ala His His Thr Leu Arg Ser Leu Arg Asn Thr
    850                 855                 860

Leu Gln Pro Glu Glu Met Leu Ser Thr Ser Asp Pro Arg Val Ser Pro
865                 870                 875                 880

Arg Leu Ser Arg Ala Ser Phe Phe Phe Gly Gln Leu Leu Gln Phe Val
                885                 890                 895

Ser Arg Ser Glu Asn Lys Tyr Lys Arg Met Asn Ser Asn Glu Arg Val
            900                 905                 910

Arg Ile Ile Ser Gly Ser Pro Leu Gly Ser Leu Ser Arg Ser Ser Leu
        915                 920                 925

Asp Ala Thr Lys Leu Leu Thr Glu Lys His Glu Glu Leu Asp Pro Glu
    930                 935                 940

Asn Glu Leu Ser Arg Asn Leu Thr Leu Ile Pro Tyr Ser Leu Val Arg
945                 950                 955                 960

Ala Phe His Cys Glu Arg Arg Arg Pro Val Leu Phe Thr Pro Thr Met
                965                 970                 975

Leu Ala Lys Thr Leu Val Gln Lys Leu Leu Asn Ser Gly Gly Ala Met
            980                 985                 990

Glu Phe Thr Ile Cys Lys Ser Asp Ile Val Thr Arg Asp Glu Phe Leu
        995                1000                1005

Arg Lys Gln Lys Thr Glu Thr Ile Ile Tyr Ser Arg Glu Lys Asn Pro
   1010                1015                1020

Asn Thr Phe Glu Cys Ile Val Pro Ala Asn Ile Glu Ala Val Ala Ala
1025                1030                1035                1040

Lys Asn Lys His Cys Leu Leu Glu Ala Gly Ile Gly Cys Val Arg Asp
                1045                1050                1055

Leu Ile Lys Cys Lys Val Tyr Pro Ile Val Leu Leu Ile Arg Val Ser
            1060                1065                1070

Glu Lys Asn Ile Lys Arg Phe Arg Lys Leu Leu Pro Arg Pro Glu Thr
        1075                1080                1085

Glu Glu Glu Phe Leu Arg Val Cys Arg Leu Lys Glu Lys Glu Leu Glu
   1090                1095                1100
```

```
Ala Leu Pro Cys Leu Tyr Ala Thr Val Glu Ala Glu Met Trp Ser Ser
1105               1110                1115                1120

Val Glu Glu Leu Leu Arg Val Leu Lys Asp Lys Ile Val Glu Glu Gln
               1125                1130                1135

Arg Lys Thr Ile Trp Val Asp Glu Asp Gln Leu
           1140                1145



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<220>
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gac atc cwg gaa cat                                                  15
Asp Ile Xaa Glu His
  1               5


<210> 7
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> MOD_RES
<222> (3)
<223> Leu or Gln

<400> 7
Asp Ile Xaa Glu His
  1               5



<210> 8
<211> 70
<212> PRT
<213> Mus sp.

<400> 8
Ala Gly Ser Glu Arg Ile Leu Leu Asp Ile Leu Glu His Asp Trp Arg
  1               5                  10                  15

Glu Ala Gln Asp Ser Arg Gln Glu Leu Cys Gln Lys Leu His Ala Val
             20                  25                  30

Gln Gly Glu Leu Gln Trp Ala Glu Glu Leu Arg Asp Lys Tyr Leu Gln
         35                  40                  45
```

```
Glu Met Glu Asp Leu Arg Leu Lys His Arg Thr Leu Leu Lys Asp Cys
     50                  55                  60

Asp Leu Tyr Lys His Arg
 65                  70


<210> 9
<211> 70
<212> PRT
<213> Homo sapiens

<400> 9
Pro Asp Ser Asp Lys Ala Ile Leu Asp Ile Leu Glu His Asp Arg Lys
  1               5                  10                  15

Glu Ala Leu Glu Asp Arg Gln Glu Leu Val Asn Arg Ile Tyr Asn Leu
             20                  25                  30

Gln Glu Glu Ala Arg Gln Ala Glu Glu Leu Arg Asp Lys Tyr Leu Glu
         35                  40                  45

Glu Lys Glu Asp Leu Glu Leu Lys Cys Ser Thr Leu Gly Lys Asp Cys
     50                  55                  60

Glu Met Tyr Lys His Arg
 65                  70


<210> 10
<211> 70
<212> PRT
<213> Homo sapiens

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Leu Thr Phe Ser Leu Ala Glu Lys Asp Ile Leu Glu Gln Ser Leu Asp
  1               5                  10                  15

Glu Ala Arg Gly Ser Arg Gln Glu Leu Val Glu Arg Ile His Ser Leu
             20                  25                  30

Arg Glu Arg Ala Val Ala Ala Glu Arg Gln Arg Glu Gln Tyr Trp Glu
         35                  40                  45

Glu Lys Glu Gln Thr Leu Leu Gln Phe Gln Lys Ser Lys Met Ala Cys
     50                  55                  60

Gln Leu Tyr Arg Glu Lys
 65                  70


<210> 11
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<212> PRT
<213> Homo sapiens
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Pro Gly Ser Glu Arg Ile Leu Leu Asp Ile Leu Glu His Asp Trp Arg
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Glu Ala Gln Asp Ser Arg Gln Glu Leu Cys Gln Lys Leu His Ala Val
20 25 30

Gln Gly Glu Leu Gln Trp Ala Glu Glu Leu Arg Asp Gln Tyr Leu Gln
35 40 45

Glu Met Glu Asp Leu Arg Leu Lys His Arg Thr Leu Gln Lys Asp Cys
50 55 60

Asp Leu Tyr Lys His Arg
65 70

<210> 12
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<212> PRT
<213> Homo sapiens

<400> 12
Leu Asp Arg Ser Ser Pro Tyr Ile Gln Val Leu Glu Glu Asp Trp Arg
1 5 10 15

Gln Ala Leu Arg Asp His Gln Glu Gln Ala Asn Thr Ile Phe Ser Leu
20 25 30

Arg Lys Asp Leu Arg Gln Gly Glu Ala Arg Arg Leu Arg Cys Met Glu
35 40 45

Glu Lys Glu Met Phe Glu Leu Gln Cys Leu Ala Leu Arg Lys Asp Ser
50 55 60

Lys Met Tyr Lys Asp Arg
65 70

<210> 13
<211> 70
<212> PRT
<213> Mus sp.

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Pro Asp Ser Asp Lys Ala Ile Leu Asp Ile Leu Glu His Asp Arg Lys
1 5 10 15

Glu Ala Leu Glu Asp Arg Gln Glu Leu Val Asn Lys Ile Tyr Asn Leu
20 25 30

Gln Glu Glu Val Arg Gln Ala Glu Glu Leu Arg Asp Lys Tyr Leu Glu
35 40 45

Glu Lys Glu Asp Leu Glu Leu Lys Cys Ser Thr Leu Gly Lys Asp Cys
50 55 60

Glu Met Tyr Lys His Arg
65 70

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ggacattctt cacaccaagg gacaaagggg ctatgtggtc ttcctggaga gcctggagtt 120
ttactaccca gaactttaca aactggtgac tggaaaggaa cccacccgga gattctccac 180
cattgtgggt aagtggcttt gctaccaggg gcaagggaac cctagtagaa ggatgtgtg 239

<210> 15
<211> 427
<212> DNA
<213> Homo sapiens

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ccatgagggc ctcacacact tcctgatgaa cgaggtcatc aaactgcagc agcaagtgaa 120
agccaaggac cttcagcgct gtgagctgct ggccaagtcc cggcaactgg aggatgagaa 180
gaagcagctg agcctgatac gggtggagct gctgaccttc caggagcgat actacaagat 240
gaaggaggag cgggacagct acaatgacga gctcgtcaag gtcaaggacg acaactacaa 300
cttagccatg cgctacgccc agctcagtga ggagaaaaac atggcggtga tgaggagccg 360
cgacctccaa ctcgaggtgg ggatgcctgg gctccggctg aactgaggga agggaaaaga 420
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<210> 17
<211> 254
<212> DNA
<213> Homo sapiens

<400> 17
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<210> 18
<211> 226
<212> DNA
<213> Homo sapiens

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accgcatgaa cacagttatg ctgcagctgg aggaggtgga gcgggagcgg gaccaggtac 180
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<212> DNA
<213> Homo sapiens

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<210> 20
<211> 185
<212> DNA
<213> Homo sapiens

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<212> DNA
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<211> 183
<212> DNA
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<210> 23
<211> 202
<212> DNA
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<212> DNA
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<211> 233
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<210> 26
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<212> DNA
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ttcattcact ctgtcaagcc aggctcactg gctgagaggg ccggactgcg tgagggccac 240
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<212> DNA
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<211> 342
<212> DNA
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<210> 30
<211> 196
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<213> Homo sapiens

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<210> 31
<211> 236
<212> DNA
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<211> 280
<212> DNA
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<211> 216
<212> DNA
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<211> 291
<212> DNA
<213> Homo sapiens

<400> 35
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gaggcgctgc cctgcctcta cgccaccgtg gaagctgaga tgtggagcag cgtggaggag 180
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gaggaccagc tgtgagcttg tctgggtctg acctacacac agacacaccg g 291